

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) An enzyme-based monitoring device for monitoring the thermal impact of thermal processing on an object, within a temperature range from 80°C to 160°C, said device comprising a container containing at least one enzyme and at least one barrier, ~~characterized in that~~ wherein:

- said container is a hermetically sealed container, and
- said container encloses a solid dehydrated mix comprising said at least one enzyme and at least one first filler, wherein the water content of said dehydrated mix is below 0.6 by weight, hermetic sealing of the hermetically sealed container being obtained by means of said at least one barrier in order to prevent entry of moisture into said container.

2-57. (Canceled)

58. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one enzyme represents between 0.001 and 10% by weight, of the solid dehydrated mix enclosed in said hermetically sealed container.

59. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one first filler represents between 90 and 99.999 % by weight of the solid dehydrated mix enclosed in said hermetically sealed container.

60. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one first filler is a non-porous filler.

61. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one first filler is an inorganic filler.

62. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one first filler is selected from the group consisting of glass beads, metal beads and silica beads.

63. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one first filler is an organic filler.

64. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one first filler consists of polymer beads.

65. (New) An enzyme-based monitoring device according to claim 1, wherein said solid dehydrated mix further comprises at least one second filler which represents up to 10 % by weight of the solid dehydrated mix enclosed in said hermetically sealed container.

66. (New) An enzyme-based monitoring device according to claim 1, wherein said solid dehydrated mix further comprises at least one second water-soluble filler which represents up to 10 % by weight of the solid dehydrated mix enclosed in said hermetically sealed container.

67. (New) An enzyme-based monitoring device according to claim 1, wherein said solid dehydrated mix further comprises at least one second organic filler which represents up to 10 % by weight of the solid dehydrated mix enclosed in said hermetically sealed container.

68. (New) An enzyme-based monitoring device according to claim 1, wherein said solid dehydrated mix further comprises at least one second filler which represents up to 10 % by weight of the solid dehydrated mix enclosed in said hermetically sealed container, and wherein said at least one second filler is selected from the group consisting of polyols and carbohydrates.

69. (New) An enzyme-based monitoring device according to claim 1, wherein said solid dehydrated mix further comprises at least one second filler which represents up to 10 % by weight of the solid dehydrated mix enclosed in said hermetically sealed container, and wherein said at least one second filler is an inorganic filler.

70. (New) An enzyme-based monitoring device according to claim 1, wherein said solid dehydrated mix further comprises at least one second filler which represents up to 10 % by weight of the solid dehydrated mix enclosed in said hermetically sealed container, and wherein said at least one second filler is selected from the group consisting of alkali and alkaline-earth metal salts.

71. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one enzyme is from bacterial, vegetal, animal or fungal origin and wherein the amount of said at least one enzyme in said device is below about 3 mg.

72. (New) An enzyme-based monitoring device according to claim 1, wherein said at least one enzyme is a bacterial α -amylase or a pectin methyl esterase.

73. (New) An enzyme-based monitoring device according to claim 1, wherein said hermetically sealed container is made from one or more moisture-impermeable materials selected from the group consisting of glass, silica, metals and polymers.

74. (New) A method of monitoring the thermal impact of thermal processing on an object by means of an enzyme-based monitoring device, said device comprising a container containing at least one enzyme and at least one barrier, said method comprising the steps of:

(a) placing said enzyme-based monitoring device in contact with said object or in the neighbourhood of said object;

(b) exposing said object and said enzyme-based monitoring device to thermal processing at a temperature within a range from 80°C to 160°C for sufficient time for degrading a substantial portion of said at least one enzyme without breaking said at least one barrier of said container;

(c) removing said container from contact with said object or from the neighbourhood of said object after completion of step (b);

characterised in that :

- said container is a hermetically sealed container,

- said container encloses a solid dehydrated mix comprising said at least one enzyme and at least one first filler, wherein the water content of said dehydrated mix is below 0.6% by weight, hermetic sealing of the hermetically sealed container being obtained by means of said at least one barrier in order to prevent entry of moisture into said container during thermal processing of said object, and

- said method further comprises the steps of:

(d) opening said hermetically sealed container and obtaining a sample of the at least one enzyme from said hermetically sealed container;

(e) measuring the residual activity of said at least one enzyme in the obtained sample, and

(f) using the measured residual activity as a means to quantify the thermal impact of the thermal processing of step (b) on one or more given target attributes of said object.

75. (New) A method of monitoring the thermal impact of thermal processing on an object according to claim 74, characterized in that :

- in step (d), a sample of said at least one enzyme enclosed in said hermetically sealed container is obtained in the form of an enzyme solution by solubilizing in or more solvents the fraction of said solid dehydrated mix comprising said at least one enzyme, and

- in step (e) said enzyme solution is put into contact with a substrate for said at least one enzyme, resulting in a product, and measuring the residual activity of said at least one enzyme is effected by quantifying the rate of formation of said product.

76. (New) A method of monitoring the thermal impact of thermal processing on an object according to claim 75, wherein said given target attribute of said object being quantified in step (f) is a chemical, physical, organoleptic or microbiological property of said object.

77. (New) A method of monitoring the thermal impact of thermal processing on an object according to claim 75, wherein said object is human or animal food.

78. (New) A method of monitoring the thermal impact of thermal processing on an object according to claim 75, wherein said object is a medical tool or device.

79. (New) A method of monitoring the thermal impact of thermal processing on an object according to claim 75, wherein said object is a pharmaceutical composition in the form of a liquid, syrup, cream or paste.

80. (New) A method of monitoring the thermal impact of thermal processing on an object according to claim 75, wherein said thermal processing is part of a pasteurization or sterilization process.

81. (New) A method of monitoring the thermal impact of thermal processing on an object according to claim 75, wherein said at least one enzyme represents between 0.001 and 10% by weight, of said solid dehydrated mix.